

**REMARKS**

Claims 3-5, 8-10 and 13-16 are pending in this application. By this Amendment, claims 3-5 and 8-10 are amended, claims 1-2, 6-7 and 11-12 are canceled, and claims 13-15 are added. Support for the amended and new claims can be found in the original claims and in the specification at least at pages 16-17 and in Table 1. In view of the amendments and the following remarks, reconsideration and allowance are respectfully requested.

**I. Claim rejections under §102**

**A. Inoue '243**

The Office Action rejects claims 1-3 and 6-8 under 35 U.S.C. §102(e) over U.S. Patent No. 6,423,243 to Inoue ("Inoue '243"). Applicants respectfully traverse the rejection.

Applicants claim priority to the September 14, 2000 filing date of JP 2000-279101. The Office Action acknowledges the claim to foreign priority and indicates that all certified copies of the priority documents have been received. Applicants submit herewith an English-language translation of JP 2000-279101, together with a statement that the translation of the certified copy is accurate, thus perfecting Applicants' claim to the September 14, 2000 priority date. JP 2000-279101 conforms to the 35 U.S.C. §112, first paragraph requirements for all of the pending claims.

Applicants September 14, 2000 priority date antedates the May 16, 2001 filing date of Inoue '243. Therefore, Inoue '243 can no longer serve as a reference under 35 U.S.C. §102(e), and the rejection of claim 1-3 and 6-8 must be withdrawn.

Accordingly, Applicants respectfully request reconsideration and withdrawal of the rejection.

**B. JP 10-335130 and Takeda**

Under 35 U.S.C. §102(b), the Office Action rejects claims 1 and 2 over JP 10-335130, and rejects claims 1, 2, 6 and 7 over U.S. Patent No. 5,980,773 to Takeda. Applicants

respectfully traverse the rejections. Claims 1, 2, 6 and 7 are canceled, thus rendering their rejection moot. Accordingly, Applicants respectfully request reconsideration and withdrawal of these rejections.

**C. Inoue '789, JP 6-263447, JP 11-302069, and JP 10-72217**

Under 35 U.S.C. §102(e), the Office Action, rejects claims 1, 2, 5-7 and 10 over U.S. Patent No. 6,217,789 to Inoue et al. ("Inoue '789"), and under 35 U.S.C. §102(b), rejects claims 1-3 and 5 over JP 6-263447, rejects claims 1-3 and 6-8 over JP 11-302069, and rejects claims 1, 2, 5-7 and 10 over JP 10-72217. Applicants respectfully traverse the rejections.

Claims 1, 2, 6 and 7 are canceled thus rendering their rejection moot. Claims 3-5 are directed to a magnetic core composition for an xDSL modem transformer having a main component comprised of specific mole percentages of MnO, ZnO, and Fe<sub>2</sub>O<sub>3</sub>. Claims 8-10 are directed to a magnetic core for an xDSL modem transformer having a main component comprised of specific mole percentages of MnO, ZnO, and Fe<sub>2</sub>O<sub>3</sub>. However, none of the cited references teach the magnetic core or core composition for an xDSL modem transformer as claimed.

Inoue '789 focuses on a Mn-Zn system ferrite, primarily containing MnO, ZnO, and Fe<sub>2</sub>O<sub>3</sub>, along with subordinant components Bi<sub>2</sub>O<sub>3</sub> and MoO<sub>3</sub>, that reportedly maintains high initial magnetic permeability over a broad temperature range of -20 to 100°C (col. 1, lines 33-40). Inoue '347 describes several embodiments combining various amounts of the metal oxides and measures and compares the initial magnetic permeability at 10 kHz at -20 to 20°C and again at 20 to 100°C. The ferrite composition reportedly could be used in a pulse transformer in S/T point interface of ISDN.

JP 6-263447 focuses on a Mn-Zn based ferrite containing MnO, ZnO, and Fe<sub>2</sub>O<sub>3</sub> reportedly designed to obtain high permeability at -200 to 100°C (Abstract). JP 11-302069 describes a Mn-Zn based ferrite containing primarily MnO, ZnO, and Fe<sub>2</sub>O<sub>3</sub> and subsidiary

components reportedly designed to obtain high permeability within -20 to 100°C and reportedly suitable for a communications transformer (Abstract). JP 10-72217 teaches a Mn-Zn ferrite containing MnO, ZnO, and Fe<sub>2</sub>O<sub>3</sub> reportedly having high permeability over a temperature range of -20 to 100°C (Abstract).

However, Inoue '789, JP 6-263447, JP 11-302069 and JP 10-72217 do not disclose any suitable composition, useful for an xDSL modem transformer and optimized to produce improved total harmonic distortion (THD) characteristics as claimed.

For example, Applicants determined that a magnetic core composition having a main component comprised of MnO: 23.8 to 24.2 mol%, ZnO: 23.0 to 23.4 mol%, and Fe<sub>2</sub>O<sub>3</sub>: 52.6 to 53.0 mol% (claim 3), or comprised of MnO: 26.1 to 26.5 mol%, ZnO: 20.1 to 20.5 mol%, and Fe<sub>2</sub>O<sub>3</sub>: 53.2 to 53.6 mol% (claim 4), or comprised of MnO: 23.0 to 23.4 mol%, ZnO: 23.4 to 23.8 mol%, and Fe<sub>2</sub>O<sub>3</sub>: 53.0 to 53.4 mol% (claim 5), produced a magnetic core for an xDSL modem transformer having a THD of not more than -80 dB at 5 kHz over a broad temperature range (see, Table 1, Examples 1-3 and 7-9 and Fig. 4). Compared to compositions outside the claimed range (see, Comp. Examples 1-6) a transformer having the magnetic core of claims 3-5 possesses superior properties in a broad frequency band and broad temperature range. For at least this reason, Inoue '789, JP 6-263447, JP 11-302069 and JP 10-72217 do not teach the composition of claims 3-5..

For at least the same reason, Inoue '789, JP 6-263447, JP 11-302069 and JP 10-72217 do not teach a magnetic core for an xDSL modem transformer having a main component comprised of specific mole percentages of MnO, ZnO, and Fe<sub>2</sub>O<sub>3</sub>, as claimed in claims 8-10.

Accordingly, Applicants respectfully request reconsideration and withdrawal of the rejections of claim 3-5 and 8-10 under 35 U.S.C. §102 over Inoue '789, JP 6-263447, JP 11-302069 and JP 10-72217.

**II. Claim rejections under §103****A. Takeda**

The Office Action rejects claims 1, 2, 6 and 7 under 35 U.S.C. §103(a) over U.S. Patent No. 5,980,773 to Takeda. Applicants respectfully traverse the rejection. Claims 1, 2, 6 and 7 are canceled, thus rendering this rejection moot. Accordingly, Applicants respectfully request reconsideration and withdrawal of the rejection.

**B. JP 6-26344, JP 10-335130, JP 10-72217, and JP 11-302069**

The Office Action rejects under 35 U.S.C. §103(a): claims 1-3 and 5 over JP 6-263447; claims 1-5 over JP 10-335130; claims 1-3, 5-8 and 10 over JP 10-72217; and claims 1-10 over JP 11-302069. Applicants respectfully traverse these rejections

Claims 1-2 and 6-7 are canceled, thus rendering their rejection moot. Claims 3-5 are directed to a magnetic core composition for an xDSL modem transformer having a main component comprised of specific mole percentages of MnO, ZnO, and Fe<sub>2</sub>O<sub>3</sub>. Claims 8-10 are directed to a magnetic core for an xDSL modem transformer having a main component comprised of specific mole percentages of MnO, ZnO, and Fe<sub>2</sub>O<sub>3</sub>. However, none of the cited references teach or suggest the magnetic core or core composition for an xDSL modem transformer as claimed.

As detailed above, JP 6-26344, JP 10-335130, JP 10-72217, and JP 11-302069 do not teach the specific magnetic core composition of claims 3-5 and 8-10 optimized for improved THD. Moreover, the references do not suggest and would not have rendered obvious the claimed core compositions to one of ordinary skill in the art.

The Office Action asserts that each of the cited references teaches a magnetic core comprising MnO, ZnO, and Fe<sub>2</sub>O<sub>3</sub> in amounts that overlap the claimed ranges. The Office Action states that product claims with numerical ranges which overlap prior art ranges have

been held to be obvious under §103, citing *inter alia*, In re Wertheim and In re Malagari, and concludes that any or each of the references suggest the claimed compositions.

The court has generally held that in order to overcome a range limitation allegedly taught in the prior art, the applicant must show that the range that was not specifically disclosed in the prior art was very significant. The court in Wertheim stated that "ranges which overlap or lie inside ranges disclosed by the prior art may be patentable if the applicant can show criticality in the claimed range by evidence of unexpected results." In re Wertheim, 191 USPQ 90, 100 (CCPA 1976). In Malagari, the court stated that a prima facie case of obviousness can be rebutted if the applicant can establish "the existence of unexpected properties in the range claimed." In re Malagari, 182 USPQ 549, 553 (CCPA 1974).

The Federal Circuit later explained, that when an applicant seeks to overcome a prima facie case of obviousness by showing improved performance in a range that is within or overlaps with a range disclosed in the prior art, the applicant must "show that the [claimed] range is *critical*, generally by showing that the claimed range achieves unexpected results relative to the prior art range." In re Woodruff, 16 USPQ 2d 1934, 1936 (Fed. Cir. 1990) (emphasis in original). More recently, the Federal Circuit explained, "[o]ne way for a patent applicant to rebut a prima facie case of obviousness is to make a showing of 'unexpected results,' i.e., to show that the claimed invention exhibits some superior property or advantage that a person or ordinary skill in the relevant art would have found surprising or unexpected." In re Soni, 34 USPQ2d 1684, 1687 (Fed. Cir. 1995).

There are at least two instances in which the claimed optimum ranges or variables are not obvious: (1) when the parameter to be optimized was not recognized to be a result-effective variable; that is, the prior art did not optimize, or suggest to optimize, the parameter that was optimized by the invention, and (2) when the results of optimizing a variable, which was known to be result effective, were unexpectedly good. See, In re Antonie, 195 USPQ 6,

9 (C.C.P.A. 1977) and In re Waymouth, 182 USPQ 290, 293 (C.C.P.A. 1974). In this instance, both situations are true.

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Applicants have discovered a non-obvious composition for a magnetic core for a high-performance xDSL modem transformer exhibiting superior THD characteristics in a broad frequency band. The cited references do not anywhere teach or suggest optimizing the combined amounts of MnO, ZnO, and Fe<sub>2</sub>O<sub>3</sub> in order to effect the THD characteristics of the magnetic core. The cited references would not have taught or suggested to one of ordinary skill in the art that the molar percent of these elements was a result-effective variable. In addition, even if the cited references would have suggested to one of ordinary skill in the art that the THD qualities would vary depending on the magnetic core composition, the cited references in no way teach or suggest that the specific compositions as claimed would have the unexpectedly superior properties of improved THD over an expansive temperature range.

Applicants provide ample evidence in the specification to show that the composition of MnO, ZnO, and Fe<sub>2</sub>O<sub>3</sub>, at molar percentages within the scope of the present claims, produces results that were not taught or suggested in the cited references. Specifically, Examples 1-13 and Comparative Examples 1-6 demonstrate the unexpectedly superior results for THD over a broad frequency range. JP 6-26344, JP 10-335130, JP 10-72217, and JP 11-302069 each fail to teach or suggest these results.

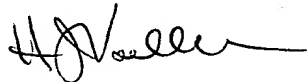
For at least these reasons, claims 3-5 and 8-10, and new claims 13-15, would not have been obvious over any of the cited references, either alone or in any combination. Accordingly, Applicants respectfully request reconsideration and withdrawal of the rejections of claims 3-5 and 8-10 under 35 U.S.C. §103(a) over JP 6-26344, JP 10-335130, JP 10-72217, and JP 11-302069.

### III. Conclusion

~~In view of the foregoing, it is respectfully submitted that this application is in~~  
condition for allowance. Favorable reconsideration and prompt allowance of claims 3-5, 8-10 and 13-15 are earnestly solicited.

Should the Examiner believe that anything further would be desirable in order to place this application in even better condition for allowance, the Examiner is invited to contact the undersigned at the telephone number set forth below.

Respectfully submitted,



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Attachment:

English translation of priority document

Date: July 11, 2003

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